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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ELMAR KIBLER, WILLIAM B. O'NEAL,
MATTHIAS WITSCHEL and HERVE R. VANTIEGHEM

Appeal 2010-004960
Application 10/522,157
Technology Center 1600

Before ROMULO H. DELMENDO, RICHARD M. LEBOVITZ, and JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

LEBOVITZ, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

This is a decision on the appeal under 35 U.S.C. § 134 by the Patent Applicant from the Patent Examiner's rejection of claims 1, 8, 9, 23, and 26-33. The Board's jurisdiction for this appeal is under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF CASE

Claim 1 is directed to a "synergistic herbicidal mixture" comprising four herbicidal components. Claims 31 is drawn to a method of controlling undesired vegetation comprising applying the synergistic mixture to the vegetation. The mixture comprises herbicides A) and C), and two herbicides of component B), for a total of four.

Claims 1, 8, 9, 23, and 26-33 are all the pending claims and they stand rejected under 35 U.S.C. § 103(a) as obvious in view of Sievernich[2] (Ans. 4).

Claim 1 is representative and reads as follows:

> 1. A synergistic herbicidal mixture comprising
>
> A) 4-[2-methyl-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-l-methyl-5-hydroxy-1H-pyrazole
> and
> B) two herbicides selected from the group consisting of imazapyr, imazaquin, imazamethabenz-methyl, imazamox, imazapic and imazethapyr;
> and,
> C) a triazine selected from the group consisting of ametryn, atrazine, cyanazine, desmetryn, dimethamethryn, prometon, prometryn, propazine, simazine, simetryn, terbumeton, terbutryn, terbutylazine and trietazine
> or their environmentally compatible salts;
> in a synergistically effective amount.

[2] Canadian Patent Application 2,334,955, published Dec. 23, 1999.

ISSUE

Did Sievernich suggest the claimed mixture of four herbicides?

If so, would persons of ordinary skill in the art have reasonably expected the claimed quaternary (4) mixture recited in claim 1 to have exhibited synergistic herbicidal activity?

LEGAL PRINCIPLES

"One way for a patent applicant to rebut a prima facie case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected." *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995).

A showing of "new and unexpected results" must be "relative to prior art." *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004).

To establish unexpected results, the claimed subject matter must be compared with the closest prior art. *In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991).

Arguments of counsel cannot take the place of evidence lacking in the record. *Estee Lauder, Inc. v. L'Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997).

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007).

FINDINGS OF FACT (FF)

1. Sievernich discloses that the "invention relates to a synergistic herbicidal mixture comprising A) at least one 3-heterocyclyl-substituted benzoyl derivative of the formula I" and "B) a synergistically effective amount of at least one herbicidal compound selected from" a group [B1-B16] of specific classes of compounds (Sievernich, p. 1, ll. 6-40 to p. 2; groups B1-B16 listed on pp. 3-7).

2. Sievernich states "the synergistic herbicidal mixture according to the invention comprises, . . . as component B), at least one herbicidal compound from amongst the groups B1, B2, B4 to B12 or B14" (*id.* at p. 29, ll. 7-25).

3. Group B2 includes imidazolinones which are listed to be: imazapyr, imazaquin, imazamethabenz, imazaethopyr, and imazamox (*id.* at p. 48, Tbl. 2).

4. Group B12 includes triazines (*id.* at p. 52, Tbl. 2).

5. Sievernich states the "synergistic herbicidal mixture preferably comprises at least one herbicidal compound from amongst the group," which includes imazapyr, imazaquin, imazamethabenz, and imazethapyr (*id.* at p. 28, ll. 10-18).

6. Sievernich discloses a ternary (3) mixture which "preferably" comprises "a 3-heterocyclyl-substituted benzoyl derivative of the formula I, a herbicidal compound from the group B2 and a herbicidal compound from the group B14" (Sievernich, p. 46, ll. 40-43).

7. Other ternary combinations are also described by Sievernich on p. 47, ll. 1-27.

8. Tables 11 and 12 of Sievernich show a synergistic binary (2) mixture of A) 4-[2-methyl-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-

methyl-5-hydroxy-1H-pyrazole ("Ia-33"; *id.* at p. 16) (as recited in instant claim 1) and B) an imidazolinone ("imazapyr") compound (B2) (*id.* at pp. 58-59; Br. 7).

9. Tables 76-82 show synergistic ternary mixtures of a 3-heterocyclyl-substituted benzoyl derivative of the formula I and two other herbicides, including the triazine atrazine (B12) (*id.* at p. 75, l. 35 to p. 77).

10. Appellants admit that Sievernich discloses:

> a synergistic binary mixture, comprising as component A) 4[2-methyl-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-methyl-5- hydroxy-1H-pyrazole and as component B) inter alia imidazolinone compounds (in group B2) or triazines (in group B12).

(Br. 5.)

11. Appellants admit that Sievernich discloses:

> synergistic ternary mixtures, comprising as component A) 4-[2-methyl-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-methyl-5-hydroxy-1H-pyrazole and as component B) two herbicidal compounds from groups B1 to B16 (page 34, line 43, and claim 25).

(Br. 5.)

ANALYSIS

Sievernich describes a synergistic herbicidal mixture that comprises the claimed 4-[2-methyl-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-methyl-5- hydroxy-1H-pyrazole of component A and imazapryr, one of the specifically identified imidazolinone herbicides of the claimed component B (FF8; Br. 7). Sievernich does not describe *two* imidazolinones as component B of claim 1 nor a triazine (component C of claim 1) in combination with component A. While Sievernich describes synergistic combinations of three herbicides (FF9 & FF11), the Examiner recognized

that Sievernich does not describe a synergistic quaternary mixture of the four specific components required by claim 1.

However, the Examiner determined that the claimed quaternary mixture would have been obvious to a person of ordinary skill in the art since Sievernich described herbicidal mixtures of at least three different components (FF9), all the specific components recited in claim 1, and synergy between them (Ans. 8-9). The Examiner concluded: "One would be motivated to make this combination with the expected benefit of having a . . . synergistic herbicidal mixture with enhanced effectiveness." (*Id.* at 9.)

Appellants acknowledge that their claim is drawn to "a selection invention." (Br. 8). However, they argue that no ternary mixtures with an imidazolinone are disclosed and no quaternary mixtures are described at all by Sievernich (*id.*).

Appellants also contend the application provides evidence of synergy between the claimed components. They contend that it would not have been predicted that the addition of triazine to component A and two imidazolinones of component B, as claimed, would produce a synergistic effect (Br. 9). Appellants argue: "Synergistic effects are not predictable but depend on the selected compounds or class of compounds." (*Id.*). "The fact that the effectiveness of an already highly active herbicidal mixture can yet again be boosted in a more than additive effect is totally unexpected and unpredictable (*Id.*). "One of skill in the art could not have guessed or known which of the numerous possible combinations from Sievernich would show synergistic activity without detrimental effects." (*Id.* at 10.)

It is true that Sievernich does not expressly disclose a *specific* ternary mixture with an imidazolinone or a quaternary component mixture of any

kind. However, Sievernich does not limit its disclosure to the specifically recited examples and combinations. To the contrary, Sievernich describes choosing "at least one herbicidal compound" from groups B1 through B16 (FF1 & FF2), indicating that more than one can be picked – a fact reflected in several of Sievernich's preferred embodiments and specific examples in which compounds from two different groups are represented in a single mixture (FF6 & FF9). Thus, the choice of an imidazolinone of group B2 and a triazine of group B12 as in claim 1, or any other combination of B groups, is reasonably suggested by Sievernich's disclosure. In fact, both group B2 and B12 compounds were disclosed by Sievernich as part of ternary synergistic mixtures (*see* FF6 & FF9, respectively).

Sievernich also describes selection of "at least one herbicidal compound" from a group that lists several different imidazolinones (FF5). Thus, while Appellants are correct that a mixture with two imidazolinones is not expressly disclosed in Sievernich, Sievernich reasonably suggests such a mixture by disclosing the choice of "at least one" from a list that includes several different imidazolinones – a statement that would be understood to mean that two imidazolinones could be utilized in an herbicidal mixture.

Appellants contend that Tables 10-17 of the application "show the synergistic effect of the fourth component on top of the activity of the three other components." (Br. 9.)

A case of prima facie obviousness can be rebutted with a showing of unexpected results. *In re Soni*, 54 F.3d at 750. Those results must be "surprising or unexpected" to one of ordinary skill in the art when considered in the context of the prior art. *Iron Grip Barbell Co.*, 392 F.3d at 1322; *Baxter Travenol Labs.*, 952 F.2d at 392. Here, Appellants assert that

the synergy observed with quaternary herbicidal mixtures within the scope of claim 1 was unexpected.

The evidence is not persuasive. Sievernich teaches synergistic binary (FF2, FF8, & FF10) and ternary (FF6, FF7, FF9, & FF11) herbicidal mixtures. The further recitation by Sievernich of the phrase "at least" in describing what components are present in its herbicidal mixtures (FF1 & FF2) reasonably suggests mixing multiple herbicides together, including mixtures of four herbicides. Sievernich names all the herbicides recited in instant claim 1 and asserts that such herbicides in combination would exhibit synergy (e.g., FF1), including binary and ternary combinations. In view of this strong teaching of synergy, persons of ordinary skill in the art would have reasonably believed that quaternary mixtures of components, having one more herbicide than specifically exemplified in Sievernich, would likewise exhibit a synergistic effect.

Appellants contend that it was unexpected that the synergy could be boosted in more than an additive manner (Br. 11).

We do not agree. Sievernich showed synergy for a binary combination and also for a ternary combination (FF8 & FF9). Thus, Sievernich showed that synergy was "boosted" when a three-component mixture was utilized as an herbicide as compared to the two-component mixture. This evidence establishes a clear trend in the prior art toward synergy as additional components are added. Based on this teaching, persons of ordinary skill in the art would have reasonably expected that a four-component mixture would display non-additive synergistic effects in the same way as the two- and three-component mixtures.

CONCLUSION OF LAW AND SUMMARY

Sievernich suggested the claimed mixture of four herbicidal compounds. Based on Sievernich, persons of ordinary skill the art would have reasonably expected the claimed mixture recited in claim 1 to have exhibited synergistic herbicidal activity. The rejection of claim 1 is affirmed. Claims 8, 9, 23, and 26-33 were not separately argued and therefore fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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